

Exhibit D

INVALIDITY CONTENTIONS FOR U.S. PATENT NO. 7,177,369
BASED ON USP 6,947,748 (“LI 748”)

Based upon Plaintiff’s Complaint, Infringement Contentions, and apparent claim constructions and application of the claims to Defendant’s accused products, as best as they can be deciphered, the reference charted below anticipates or at least renders obvious the asserted claims. These invalidity contentions are not an admission by the Defendant that the accused products are covered by or infringe the asserted claims, particularly when these claims are properly construed and applied. These invalidity contentions are not an admission that the Defendant concedes or acquiesces to any claim construction implied or suggested by Plaintiff’s Complaint or Infringement Contentions. Nor is Defendant asserting any claim construction positions through these charts, including whether the preamble is a limitation. The portions of the prior art reference cited below are not exhaustive but are exemplary in nature.

U.S. Patent No. 6,947,748 to Li et al. (“Li 748”) was filed on December 15, 2000 and issued on September 20, 2005. This patent is prior art under at least 35 U.S.C. § 102(a)(b)(e)(g), and 103(a). As described in the following claim chart, the asserted claims of U.S. Patent No. 7,177,369 (the “’369 Patent”), are invalid as anticipated by Li 748. This patent also published as U.S. Pat. Appl. No. 2002/0119781 on August 29, 2002. The citations below are to the ‘748 patent, but Defendants intend to rely upon corresponding passages of this published application as appropriate.

To the extent that Li 748 is found not to anticipate one or more of the asserted claims of the ’369 Patent, these claims are invalid as obvious in view of Li 748 alone or in combination with other prior art references disclosed in Defendant’s Invalidity Contentions and accompanying charts, including without limitation as set forth below.

Note that Li 748 is expressly incorporated by reference into Li 827. As noted in the chart for Li 827, these two references (Li 748 and Li 827) would have been combined under multiple different theories including: (1) that the incorporation by reference establishes that Li 827 has all of the content of Li 748 for purposes of anticipation; and (2) that the incorporation by reference establishes a express motivation to combine the two references for purposes of obviousness with a reasonable expectation of success.

Note also that Li 748 expressly references the Wong reference. See Li 748 at 1:50-53. This express reference establishes that Li 748 (and therefore Li 827 which incorporates Li 748) would have been combined with Wong under multiple different theories including: (1) that the reference establishes that Li 748 has all of the content of Wong for purposes of anticipation; and (2) that the express reference establishes a express motivation to combine the two references for purposes of obviousness with a reasonable expectation of success.

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Claim 1	
1[p] A method comprising:	<p>To the extent the preamble is limiting, Li 748 discloses this claim limitation explicitly, inherently, or as a matter of common sense, or it would have been obvious to add missing aspects of the limitation.</p> <p>For example, see the following passages and/or figures, as well as all related disclosures:</p> <p>Li 748 set forth a system that measures multipath delay to estimate a channel response and uses the estimation to adjust OFDM tone power levels.</p> <p>Abstract (“A method and apparatus for subcarrier selection for systems is described. In one embodiment, the system employs orthogonal frequency division multiple access (OFDMA). In one embodiment, a method for subcarrier selection comprises each of multiple subscribers measuring channel and interference information for subcarriers based on pilot symbols received from a base station, at least one of subscribers selecting a set of candidate subcarriers, providing feedback information on the set of candidate subcarriers to the base station, and the one subscriber receiving an indication of subcarriers of the set of subcarriers selected by the base station for use by the one subscriber.”)</p> <p>See claims 1-23 (all claiming measurement of channel information and adjusting OFDM power levels in a downlink transmission based on the measurement).</p> <p>1:43-53 (“Multipath causes frequency-selective fading. The channel gains are different for different subcarriers. Furthermore, the channels are typically uncorrelated for different subscribers. The subcarriers that are in deep fade for one subscriber may provide high channel gains for another subscriber. Therefore, it is advantageous in an OFDMA system to adaptively allocate the subcarriers to subscribers so that each subscriber enjoys a high channel gain. For more information, see Wong et al., “Multiuser OFDM with Adaptive Subcarrier, Bit and Power Allocation,” IEEE J. Select. Areas Commun., Vol. 17(10), pp. 1747-1758, October 1999.”)</p>

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	<p>See 2:8-18;</p> <p>See 3:7-60 (disclosing measurement of channel and adjusting OFDM downlink transmissions thereon);</p> <p>See Figures 1A, 1B</p> <p>5:9-6:28 (“FIG. 1A illustrates multiple subcarriers, such as subcarrier 101, and cluster 102. A cluster, such as cluster 102, is defined as a logical unit that contains at least one physical subcarrier, as shown in FIG. 1A. A cluster can contain consecutive or disjoint subcarriers. The mapping between a cluster and its subcarriers can be fixed or reconfigurable. In the latter case, the base station informs the subscribers when the clusters are redefined. In one embodiment, the frequency spectrum includes 512 subcarriers and each cluster includes four consecutive subcarriers, thereby resulting in 128 clusters.</p> <p>An Exemplary Subcarrier/Cluster Allocation Procedure</p> <p>FIG. 1B is a flow diagram of one embodiment of a process for allocation clusters to subscribers. The process is performed by processing logic that may comprise hardware (e.g., dedicated logic, circuitry, etc.), software (such as that which runs on, for example, a general purpose computer system or dedicated machine), or a combination of both.</p> <p>Referring to FIG. 1B, each base station periodically broadcasts pilot OFDM symbols to every subscriber within its cell (or sector) (processing block 101). The pilot symbols, often referred to as a sounding sequence or signal, are known to both the base station and the subscribers. In one embodiment, each pilot symbol covers the entire OFDM frequency bandwidth. The pilot symbols may be different for different cells (or sectors). The pilot symbols can serve multiple purposes: time and frequency synchronization, channel estimation and signal-to-interference/noise (SINR) ratio measurement for cluster allocation.</p> <p>Next, each subscriber continuously monitors the reception of the pilot symbols and measures the SINR and/or other parameters, including inter-cell interference and intra-cell traffic, of each cluster (processing block 102). Based on this information, each subscriber selects one or more clusters with good performance (e.g., high SINR and low traffic</p>

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	<p>loading) relative to each other and feeds back the information on these candidate clusters to the base station through predefined uplink access channels (processing block 103). For example, SINR values higher than 10 dB may indicate good performance. Likewise, a cluster utilization factor less than 50% may be indicative of good performance. Each subscriber selects the clusters with relatively better performance than others. The selection results in each subscriber selecting clusters they would prefer to use based on the measured parameters.</p> <p>In one embodiment, each subscriber measures the SINR of each subcarrier cluster and reports these SINR measurements to their base station through an access channel. The SINR value may comprise the average of the SINR values of each of the subcarriers in the cluster. Alternatively, the SINR value for the cluster may be the worst SINR among the SINR values of the subcarriers in the cluster. In still another embodiment, a weighted averaging of SINR values of the subcarriers in the cluster is used to generate an SINR value for the cluster. This may be particularly useful in diversity clusters where the weighting applied to the subcarriers may be different.</p> <p>The feedback of information from each subscriber to the base station contains a SINR value for each cluster and also indicates the coding/modulation rate that the subscriber desires to use. No cluster index is needed to indicate which SINR value in the feedback corresponds to which cluster as long as the order of information in the feedback is known to the base station. In an alternative embodiment, the information in the feedback is ordered according to which clusters have the best performance relative to each other for the subscriber. In such a case, an index is needed to indicate to which cluster the accompanying SINR value corresponds.</p> <p>Upon receiving the feedback from a subscriber, the base station further selects one or more clusters for the subscriber among the candidates (processing block 104). The base station may utilize additional information available at the base station, e.g., the traffic load information on each subcarrier, amount of traffic requests queued at the base station for each frequency band, whether frequency bands are overused, and how long a subscriber has been waiting to send information. The subcarrier loading information of neighboring cells can also be exchanged between base stations. The base stations can use this information in subcarrier allocation to reduce inter-cell interference.</p>

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	<p>After cluster selection, the base station notifies the subscriber about the cluster allocation through a downlink common control channel or through a dedicated downlink traffic channel if the connection to the subscriber has already been established (processing block 105). In one embodiment, the base station also informs the subscriber about the appropriate modulation/coding rates.”)</p> <p>See 6:29-65.</p> <p>See Figure 4 and 9:49-10:47 (measurement and adjustment of OFDM transmissions);</p> <p>The channel estimation can be done at the base station.</p> <p>15:52-67 (“In one embodiment, for cells containing mixed mobile and fixed subscribers, a <u>channel/interference variation detector can be implemented at</u> either the subscriber or <u>the base station,</u> or both. Using the detection results, the subscriber and the base station intelligently selects diversity clusters to mobile subscribers or fixed subscribers at cell boundaries, and coherence clusters to fixed subscribers close to the base station. The channel/interference variation detector measures the channel (SINR) variation from time to time for each cluster. For example, in one embodiment, the channel/interference detector measures the power difference between pilot symbols for each cluster and averages the difference over a moving window (e.g., 4 time slots). A large difference indicates that channel/interference changes frequently and subcarrier allocation may be not reliable. In such a case, diversity clusters are more desirable for the subscriber....</p> <p>FIG. 11 is a flow diagram of one embodiment of a process for intelligent selection between diversity clusters and coherence clusters depending on subscribers mobility. The process is performed by processing logic that may comprise hardware (e.g., circuitry, dedicated logic, etc.), software (such as that which runs on, for example, a general purpose computer system or dedicated machine), or a combination of both.</p>

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	<p>Referring to FIG. 11, processing logic in the base station performs channel/interference variation detection (processing block 1101). Processing logic then tests whether the results of the channel/interference variation detection indicate that the user is mobile or in a fixed position close to the edge of the cell (processing block 1102). If the user is not mobile or is not in a fixed position close to the edge of the cell, processing transitions to processing block 1103 where processing logic in the base station selects coherence clusters; otherwise, processing transitions to processing block 1104 in which processing logic in the base station selects diversity clusters.”)</p> <p>See Figure 11.</p> <p>One of ordinary skill would find this limitation disclosed either expressly or inherently in the teachings of this reference and its incorporated disclosures taken as a whole, or in combination with the state of the art at the time of the alleged invention. To the extent this reference is not found to teach this element explicitly, implicitly, or inherently, the element would have been obvious to one of ordinary skill in the art based on this reference, common sense, ordinary creativity of one of ordinary skill in the art, and the state of the art. Additionally, it would have been obvious to combine this reference with one or more other prior art references identified in Defendants’ Invalidity Contentions Cover Pleading, particularly, the passages in the base invalidity contention document discussing the Channel Estimation and OFDM Tone Modification references. Rather than repeat those disclosures here, they are incorporated by reference into this chart.</p>
1[a] identifying at least one multipath transmission delay within a reverse path data signal received from a receiving device;	<p>Li 748 discloses identifying at least one multipath transmission delay within a reverse path data signal received from a receiving device.</p> <p>For example, see the following passages and/or figures, as well as all related disclosures:</p> <p>See discussion in 1[p] on operation of system.</p>

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	<p>Abstract (“A method and apparatus for subcarrier selection for systems is described. In one embodiment, the system employs orthogonal frequency division multiple access (OFDMA). In one embodiment, a method for subcarrier selection comprises each of multiple subscribers measuring channel and interference information for subcarriers based on pilot symbols received from a base station, at least one of subscribers selecting a set of candidate subcarriers, providing feedback information on the set of candidate subcarriers to the base station, and the one subscriber receiving an indication of subcarriers of the set of subcarriers selected by the base station for use by the one subscriber.”)</p> <p>See claims 1-23 (all claiming measurement of channel information and adjusting OFDM power levels in a downlink transmission based on the measurement).</p> <p>See 2:8-18;</p> <p>See 3:7-60 (disclosing measurement of channel and adjusting OFDM downlink transmissions thereon);</p> <p>See Figures 1A, 1B, 2, 3, 4, 5, 9, 10.</p> <p>5:9-6:28 (“... An Exemplary Subcarrier/Cluster Allocation Procedure FIG. 1B is a flow diagram of one embodiment of a process for allocation clusters to subscribers. The process is performed by processing logic that may comprise hardware (e.g., dedicated logic, circuitry, etc.), software (such as that which runs on, for example, a general purpose computer system or dedicated machine), or a combination of both. Referring to FIG. 1B, each base station periodically broadcasts pilot OFDM symbols to every subscriber within its cell (or sector) (processing block 101). The pilot symbols, often referred to as a sounding sequence or signal, are known to both the base station and the subscribers. In one embodiment, each pilot symbol covers the entire OFDM frequency bandwidth. The pilot symbols may be different for different cells (or sectors). The pilot</p>

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	<p>symbols can serve multiple purposes: time and frequency synchronization, channel estimation and signal-to-interference/noise (SINR) ratio measurement for cluster allocation. Next, each subscriber continuously monitors the reception of the pilot symbols and measures the SINR and/or other parameters, including inter-cell interference and intra-cell traffic, of each cluster (processing block 102). Based on this information, each subscriber selects one or more clusters with good performance (e.g., high SINR and low traffic loading) relative to each other and feeds back the information on these candidate clusters to the base station through predefined uplink access channels (processing block 103). For example, SINR values higher than 10 dB may indicate good performance. Likewise, a cluster utilization factor less than 50% may be indicative of good performance. Each subscriber selects the clusters with relatively better performance than others. The selection results in each subscriber selecting clusters they would prefer to use based on the measured parameters.</p> <p>In one embodiment, each subscriber measures the SINR of each subcarrier cluster and reports these SINR measurements to their base station through an access channel. The SINR value may comprise the average of the SINR values of each of the subcarriers in the cluster. Alternatively, the SINR value for the cluster may be the worst SINR among the SINR values of the subcarriers in the cluster. In still another embodiment, a weighted averaging of SINR values of the subcarriers in the cluster is used to generate an SINR value for the cluster. This may be particularly useful in diversity clusters where the weighting applied to the subcarriers may be different.</p> <p>The feedback of information from each subscriber to the base station contains a SINR value for each cluster and also indicates the coding/modulation rate that the subscriber desires to use. No cluster index is needed to indicate which SINR value in the feedback corresponds to which cluster as long as the order of information in the feedback is known to the base station. In an alternative embodiment, the information in the feedback is ordered according to which clusters have the best performance relative to each other for the subscriber. In such a case, an index is needed to indicate to which cluster the accompanying SINR value corresponds.</p> <p>...”)</p>

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	<p>The channel estimation can be done at the base station or at the subscriber. When done at the subscriber, the information is “within a reverse path data signal....” (or obvious for that) because the feedback information contains the multipath transmission delay in its content for example.</p> <p>15:52-67 (“In one embodiment, for cells containing mixed mobile and fixed subscribers, a <u>channel/interference variation detector can be implemented at</u> either the subscriber or <u>the base station,</u> or both. Using the detection results, the subscriber and the base station intelligently selects diversity clusters to mobile subscribers or fixed subscribers at cell boundaries, and coherence clusters to fixed subscribers close to the base station. The channel/interference variation detector measures the channel (SINR) variation from time to time for each cluster. For example, in one embodiment, the channel/interference detector measures the power difference between pilot symbols for each cluster and averages the difference over a moving window (e.g., 4 time slots). A large difference indicates that channel/interference changes frequently and subcarrier allocation may be not reliable. In such a case, diversity clusters are more desirable for the subscriber....</p> <p>FIG. 11 is a flow diagram of one embodiment of a process for intelligent selection between diversity clusters and coherence clusters depending on subscribers mobility. The process is performed by processing logic that may comprise hardware (e.g., circuitry, dedicated logic, etc.), software (such as that which runs on, for example, a general purpose computer system or dedicated machine), or a combination of both.</p> <p>Referring to FIG. 11, processing logic in the base station performs channel/interference variation detection (processing block 1101). Processing logic then tests whether the results of the channel/interference variation detection indicate that the user is mobile or in a fixed position close to the edge of the cell (processing block 1102). If the user is not mobile or is not in a fixed position close to the edge of the cell, processing transitions to processing block 1103 where processing logic in the base station selects coherence clusters; otherwise, processing transitions to processing block 1104 in which processing logic in the base station selects diversity clusters.”)</p>

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	<p>See Figure 11.</p> <p>See 6:55-67 (process of remeasuring / training);</p> <p>See 7:30-9:40 (details of channel estimation and measurement which is then used to adjust OFDM power levels).</p> <p>See 9:41-10:47 (example of measurement and calculation of interference levels to be used subsequently for transmission).</p> <p>See Figure 5; 10:49-11:2(format of information “within a reverse path data signal received from a receiving device” that is used to adjust OFDM power levels by the base station).</p> <p>One of ordinary skill would find this limitation disclosed either expressly or inherently in the teachings of this reference and its incorporated disclosures taken as a whole, or in combination with the state of the art at the time of the alleged invention. To the extent this reference is not found to teach this element explicitly, implicitly, or inherently, the element would have been obvious to one of ordinary skill in the art based on this reference, common sense, ordinary creativity of one of ordinary skill in the art, and the state of the art. Additionally, it would have been obvious to combine this reference with one or more other prior art references identified in Defendants’ Invalidity Contentions Cover Pleading, particularly, the passages in the base invalidity contention document discussing the Channel Estimation references. Rather than repeat those disclosures here, they are incorporated by reference into this chart.</p>
<p>1[b] determining at least one forward path pre-equalization parameter based on said at least one transmission delay; and</p>	<p>Li 748 discloses determining at least one forward path pre-equalization parameter based on said at least one transmission delay.</p> <p>For example, see the following passages and/or figures, as well as all related disclosures:</p>

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	<p>See discussion in 1[p] regarding adaptation of the downlink OFDM channel transmission based on the uplink signals.</p> <p>Abstract (“A method and apparatus for subcarrier selection for systems is described. In one embodiment, the system employs orthogonal frequency division multiple access (OFDMA). In one embodiment, a method for subcarrier selection comprises each of multiple subscribers measuring channel and interference information for subcarriers based on pilot symbols received from a base station, at least one of subscribers selecting a set of candidate subcarriers, providing feedback information on the set of candidate subcarriers to the base station, and the one subscriber receiving an indication of subcarriers of the set of subcarriers selected by the base station for use by the one subscriber.”)</p> <p>See claims 1-23 (all claiming measurement of channel information and adjusting OFDM power levels in a downlink transmission based on the measurement).</p> <p>1:43-53 (“Multipath causes frequency-selective fading. The channel gains are different for different subcarriers. Furthermore, the channels are typically uncorrelated for different subscribers. The subcarriers that are in deep fade for one subscriber may provide high channel gains for another subscriber. Therefore, it is advantageous in an OFDMA system to adaptively allocate the subcarriers to subscribers so that each subscriber enjoys a high channel gain. For more information, see Wong et al., “Multiuser OFDM with Adaptive Subcarrier, Bit and Power Allocation,” IEEE J. Select. Areas Commun., Vol. 17(10), pp. 1747-1758, October 1999.”)</p> <p>See 2:8-18;</p> <p>See 3:7-60 (“Upon receiving the information from the subscriber, the base station further selects the subcarriers among the candidates, utilizing additional information available at the base station, e.g., the traffic load information on each subcarrier, amount of traffic requests queued at the base station for each frequency band, whether frequency bands are overused, and/or how long a subscriber has been waiting to send information. In one</p>

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	<p>embodiment, the subcarrier loading information of neighboring cells can also be exchanged between base stations. The base stations can use this information in subcarrier allocation to reduce inter-cell interference.</p> <p>In one embodiment, the selection by the base station of the channels to allocate, based on the feedback, results in the selection of coding/modulation rates. Such coding/modulation rates may be specified by the subscriber when specifying subcarriers that it finds favorable to use. For example, if the SINR is less than a certain threshold (e.g., 12 dB), quadrature phase shift keying (QPSK) modulation is used; otherwise, 16 quadrature amplitude modulation (QAM) is used. Then the base station informs the subscribers about the subcarrier allocation and the coding/modulation rates to use.</p> <p>In one embodiment, the feedback information for downlink subcarrier allocation is transmitted to the base station through the uplink access channel, which occurs in a short period every transmission time slot, e.g., 400 microseconds in every 10-millisecond time slot. In one embodiment, the access channel occupies the entire frequency bandwidth. Then the base station can collect the uplink SINR of each subcarrier directly from the access channel. The SINR as well as the traffic load information on the uplink subcarriers are used for uplink subcarrier allocation.</p> <p>For either direction, the base station makes the final decision of subcarrier allocation for each subscriber.”);</p> <p>See Figures 1A, 1B, 3, 4, 5, 6</p> <p>5:20-6:28 (“An Exemplary Subcarrier/Cluster Allocation Procedure FIG. 1B is a flow diagram of one embodiment of a process for allocation clusters to subscribers. The process is performed by processing logic that may comprise hardware (e.g., dedicated logic, circuitry, etc.), software (such as that which runs on, for example, a general purpose computer system or dedicated machine), or a combination of both. ... Next, each subscriber continuously monitors the reception of the pilot symbols and measures the SINR and/or other parameters, including inter-cell interference and intra-cell traffic, of each cluster (processing block 102). Based on this information, each subscriber</p>

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	<p>selects one or more clusters with good performance (e.g., high SINR and low traffic loading) relative to each other and feeds back the information on these candidate clusters to the base station through predefined uplink access channels (processing block 103). For example, SINR values higher than 10 dB may indicate good performance. Likewise, a cluster utilization factor less than 50% may be indicative of good performance. Each subscriber selects the clusters with relatively better performance than others. The selection results in each subscriber selecting clusters they would prefer to use based on the measured parameters.</p> <p>In one embodiment, each subscriber measures the SINR of each subcarrier cluster and reports these SINR measurements to their base station through an access channel. The SINR value may comprise the average of the SINR values of each of the subcarriers in the cluster. Alternatively, the SINR value for the cluster may be the worst SINR among the SINR values of the subcarriers in the cluster. In still another embodiment, a weighted averaging of SINR values of the subcarriers in the cluster is used to generate an SINR value for the cluster. This may be particularly useful in diversity clusters where the weighting applied to the subcarriers may be different.</p> <p>The feedback of information from each subscriber to the base station contains a SINR value for each cluster and also indicates the coding/modulation rate that the subscriber desires to use. No cluster index is needed to indicate which SINR value in the feedback corresponds to which cluster as long as the order of information in the feedback is known to the base station. In an alternative embodiment, the information in the feedback is ordered according to which clusters have the best performance relative to each other for the subscriber. In such a case, an index is needed to indicate to which cluster the accompanying SINR value corresponds.</p> <p>Upon receiving the feedback from a subscriber, the base station further selects one or more clusters for the subscriber among the candidates (processing block 104). The base station may utilize additional information available at the base station, e.g., the traffic load information on each subcarrier, amount of traffic requests queued at the base station for each frequency band, whether frequency bands are overused, and how long a subscriber has been waiting to send information. The subcarrier loading information of neighboring cells</p>

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	<p>can also be exchanged between base stations. The base stations can use this information in subcarrier allocation to reduce inter-cell interference.</p> <p>After cluster selection, the base station notifies the subscriber about the cluster allocation through a downlink common control channel or through a dedicated downlink traffic channel if the connection to the subscriber has already been established (processing block 105). In one embodiment, the base station also informs the subscriber about the appropriate modulation/coding rates.”)</p> <p>See 6:29-65.</p> <p>See Figure 4 and 9:49-10:47 (measurement and adjustment of OFDM transmissions);</p> <p>The base station adjusts the OFDM power levels.</p> <p>15:52-67 (“In one embodiment, for cells containing mixed mobile and fixed subscribers, a <u>channel/interference variation detector can be implemented at</u> either the subscriber or <u>the base station</u>, or both. Using the detection results, the subscriber and the base station intelligently selects diversity clusters to mobile subscribers or fixed subscribers at cell boundaries, and coherence clusters to fixed subscribers close to the base station. The channel/interference variation detector measures the channel (SINR) variation from time to time for each cluster. For example, in one embodiment, the channel/interference detector measures the power difference between pilot symbols for each cluster and averages the difference over a moving window (e.g., 4 time slots). A large difference indicates that channel/interference changes frequently and subcarrier allocation may be not reliable. In such a case, diversity clusters are more desirable for the subscriber.....</p> <p>FIG. 11 is a flow diagram of one embodiment of a process for intelligent selection between diversity clusters and coherence clusters depending on subscribers mobility. The process is performed by processing logic that may comprise hardware (e.g., circuitry, dedicated logic, etc.), software (such as that which runs on, for example, a general purpose computer system or dedicated machine), or a combination of both.</p>

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	<p>Referring to FIG. 11, processing logic in the base station performs channel/interference variation detection (processing block 1101). Processing logic then tests whether the results of the channel/interference variation detection indicate that the user is mobile or in a fixed position close to the edge of the cell (processing block 1102). If the user is not mobile or is not in a fixed position close to the edge of the cell, processing transitions to processing block 1103 where processing logic in the base station selects coherence clusters; otherwise, processing transitions to processing block 1104 in which processing logic in the base station selects diversity clusters.”)</p> <p>See Figure 11.</p> <p>See 7:1-28 (describing adaptive modulation and coding including using QPSK).</p> <p>See 2:59-3:6 (“A distributed, reduced-complexity approach for subcarrier allocation is described. The techniques disclosed herein are described using OFDMA (clusters) as an example. However, they are not limited to OFDMA-based systems. The techniques apply to multi-carrier systems in general, where, for example, a carrier can be a cluster in OFDMA, a spreading code in CDMA, an antenna beam in SDMA (space-division multiple access), etc. In one embodiment, subcarrier allocation is performed in each cell separately. Within each cell, the allocation for individual subscribers (e.g., mobiles) is also made progressively as each new subscriber is added to the system as opposed to joint allocation for subscribers within each cell in which allocation decisions are made taking into account all subscribers in a cell for each allocation.”);</p> <p>See 3:21-55 (describing allocation of subchannels based on measurements);</p> <p>See Fig. 13; 11:3-39 (describing an exemplary base station operation for adjusting power levels in OFDM tones);</p>

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	<p>See 11:40-12:54 (describing ability to do cluster allocations across groups on the downlink to the subscribers).</p> <p>See Figure 8; 12:55-14:11 (describing approach for cluster management of downlink OFDM subcarriers);</p> <p>See Figures 9-10; 14:15-15:67. Describing ability to use both coherence and diversity clusters in OFDM management);</p> <p>See claims 10, 11, 12, 14, 19, 21, 23 describing base station allocation of OFDMA subcarriers and processing thereon.</p> <p>One of ordinary skill would find this limitation disclosed either expressly or inherently in the teachings of this reference and its incorporated disclosures taken as a whole, or in combination with the state of the art at the time of the alleged invention. To the extent this reference is not found to teach this element explicitly, implicitly, or inherently, the element would have been obvious to one of ordinary skill in the art based on this reference, common sense, ordinary creativity of one of ordinary skill in the art, and the state of the art. Additionally, it would have been obvious to combine this reference with one or more other prior art references identified in Defendants' Invalidity Contentions Cover Pleading, particularly, the passages in the base invalidity contention document discussing the Channel Estimation references. Rather than repeat those disclosures here, they are incorporated by reference into this chart.</p>
<p>l[c] modifying a forward path data signal that is to be transmitted to the receiving device based on said at least one forward path pre-equalization parameter, where said modifying includes selectively setting different transmission power levels</p>	<p>Li 748 discloses modifying a forward path data signal that is to be transmitted to the receiving device based on said at least one forward path pre-equalization parameter, where said modifying includes selectively setting different transmission power levels for at least two Orthogonal Frequency Division Multiplexing (OFDM) tones in said forward path data signal.</p> <p>For example, see the following passages and/or figures, as well as all related disclosures:</p>

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<p>for at least two Orthogonal Frequency Division Multiplexing (OFDM) tones in said forward path data signal.</p>	<p>See citations for 1[p], 1[b] describing ability to selectively set transmission power levels for different OFDM subcarriers on downlink (forward) path based on measurements within reverse link signal and the parameters calculated thereon;</p> <p>One of ordinary skill would find this limitation disclosed either expressly or inherently in the teachings of this reference and its incorporated disclosures taken as a whole, or in combination with the state of the art at the time of the alleged invention. To the extent this reference is not found to teach this element explicitly, implicitly, or inherently, the element would have been obvious to one of ordinary skill in the art based on this reference, common sense, ordinary creativity of one of ordinary skill in the art, and the state of the art. Additionally, it would have been obvious to combine this reference with one or more other prior art references identified in Defendants' Invalidity Contentions Cover Pleading, particularly, the passages in the base invalidity contention document discussing the OFDM Tone Modification references. Rather than repeat those disclosures here, they are incorporated by reference into this chart.</p>
<p>2. The method as recited in claim 1, further comprising: receiving said reverse path data signal over at least one reverse transmission path.</p>	<p>Li 748 discloses receiving said reverse path data signal over at least one reverse transmission path.</p> <p>For example, see the following passages and/or figures, as well as all related disclosures:</p> <p>See discussion of 1[p], 1[a] describing reverse path transmissions (uplink to base station) and signals sent thereon such as the "feedback" signal.</p> <p>One of ordinary skill would find this limitation disclosed either expressly or inherently in the teachings of this reference and its incorporated disclosures taken as a whole, or in combination with the state of the art at the time of the alleged invention. To the extent this reference is not found to teach this element explicitly, implicitly, or inherently, the element would have been obvious to one of ordinary skill in the art based on this reference, common sense, ordinary creativity of one of ordinary skill in the art, and the state of the art.</p>

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	<p>Additionally, it would have been obvious to combine this reference with one or more other prior art references identified in Defendants' Invalidity Contentions Cover Pleading, particularly, the passages in the base invalidity contention document discussing the Channel Estimation references. Rather than repeat those disclosures here, they are incorporated by reference into this chart.</p>
<p>3. The method as recited in claim 2, further comprising: transmitting said modified forward path data signal over at least one forward transmission path.</p>	<p>Li 748 discloses transmitting said modified forward path data signal over at least one forward transmission path.</p> <p>For example, see the following passages and/or figures, as well as all related disclosures:</p> <p>See discussion of 1[p], 1[c] describing forward path transmissions (downlink from base station) and signals sent thereon using OFDM subcarriers.</p> <p>One of ordinary skill would find this limitation disclosed either expressly or inherently in the teachings of this reference and its incorporated disclosures taken as a whole, or in combination with the state of the art at the time of the alleged invention. To the extent this reference is not found to teach this element explicitly, implicitly, or inherently, the element would have been obvious to one of ordinary skill in the art based on this reference, common sense, ordinary creativity of one of ordinary skill in the art, and the state of the art. Additionally, it would have been obvious to combine this reference with one or more other prior art references identified in Defendants' Invalidity Contentions Cover Pleading, particularly, the passages in the base invalidity contention document discussing the OFDM Tone Modification references. Rather than repeat those disclosures here, they are incorporated by reference into this chart.</p>
<p>4. The method as recited in claim 1, wherein said reverse path data signal includes at least one type of data selected from a group of different types of data comprising Orthogonal</p>	<p>Li 748 discloses wherein said reverse path data signal includes at least one type of data selected from a group of different types of data comprising Orthogonal Frequency Division Multiplexing (OFDM) data and Quadrature Phase Shift Keying (QPSK) data.</p> <p>For example, see the following passages and/or figures, as well as all related disclosures:</p>

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<p>Frequency Division Multiplexing (OFDM) data and Quadrature Phase Shift Keying (QPSK) data.</p>	<p>The preferred embodiment shows OFDM data transmitted in both directions between the base station and subscriber.</p> <p>See discussion of 1[p], 1[a], 1[b], 1[c] describing reverse and forward path transmissions (downlink from base station) and signals sent thereon using OFDM subcarriers.</p> <p>Li 748 teaches the same coding on both uplink and downlink. For example, the claims recite using an OFDMA system without differentiation between uplink and downlink.</p> <p>See 7:1-28 (describing adaptive modulation and coding including using QPSK).</p> <p>See 3:32-42 (“In one embodiment, the selection by the base station of the channels to allocate, based on the feedback, results in the selection of coding/modulation rates. Such coding/modulation rates may be specified by the subscriber when specifying subcarriers that it finds favorable to use. For example, if the SINR is less than a certain threshold (e.g., 12 dB), quadrature phase shift keying (QPSK) modulation is used; otherwise, 16 quadrature amplitude modulation (QAM) is used. Then the base station informs the subscribers about the subcarrier allocation and the coding/modulation rates to use.”)</p> <p>One of ordinary skill would find this limitation disclosed either expressly or inherently in the teachings of this reference and its incorporated disclosures taken as a whole, or in combination with the state of the art at the time of the alleged invention. To the extent this reference is not found to teach this element explicitly, implicitly, or inherently, the element would have been obvious to one of ordinary skill in the art based on this reference, common sense, ordinary creativity of one of ordinary skill in the art, and the state of the art. Additionally, it would have been obvious to combine this reference with one or more other prior art references identified in Defendants’ Invalidity Contentions Cover Pleading, particularly, the passages in the base invalidity contention document discussing the Channel Estimation and QPSK Usage references. Rather than repeat those disclosures here, they are incorporated by reference into this chart.</p>

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<p>5. The method as recited in claim 1, wherein said modified forward path data signal includes at least one type of data selected from a group of different types of data comprising Orthogonal Frequency Division Multiplexing (OFDM) data and Quadrature Phase Shift Keying (QPSK) data.</p>	<p>Li 748 discloses The method as recited in claim 1, wherein said modified forward path data signal includes at least one type of data selected from a group of different types of data comprising Orthogonal Frequency Division Multiplexing (OFDM) data and Quadrature Phase Shift Keying (QPSK) data.</p> <p>For example, see the following passages and/or figures, as well as all related disclosures:</p> <p>See citations for claim 4.</p> <p>One of ordinary skill would find this limitation disclosed either expressly or inherently in the teachings of this reference and its incorporated disclosures taken as a whole, or in combination with the state of the art at the time of the alleged invention. To the extent this reference is not found to teach this element explicitly, implicitly, or inherently, the element would have been obvious to one of ordinary skill in the art based on this reference, common sense, ordinary creativity of one of ordinary skill in the art, and the state of the art. Additionally, it would have been obvious to combine this reference with one or more other prior art references identified in Defendants' Invalidity Contentions Cover Pleading, particularly, the passages in the base invalidity contention document discussing the QPSK Usage and OFDM Tone Modification references. Rather than repeat those disclosures here, they are incorporated by reference into this chart.</p>
<p>6. The method as recited in claim 5, wherein said modified forward path data signal includes sub-carrier pre-equalized OFDM data.</p>	<p>Li 748 discloses wherein said modified forward path data signal includes sub-carrier pre-equalized OFDM data.</p> <p>For example, see the following passages and/or figures, as well as all related disclosures:</p> <p>See discussion of l[p], l[c] describing forward path transmissions (downlink from base station) signals with pre-equalized OFDM subcarriers data.</p>

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	<p>One of ordinary skill would find this limitation disclosed either expressly or inherently in the teachings of this reference and its incorporated disclosures taken as a whole, or in combination with the state of the art at the time of the alleged invention. To the extent this reference is not found to teach this element explicitly, implicitly, or inherently, the element would have been obvious to one of ordinary skill in the art based on this reference, common sense, ordinary creativity of one of ordinary skill in the art, and the state of the art. Additionally, it would have been obvious to combine this reference with one or more other prior art references identified in Defendants' Invalidity Contentions Cover Pleading, particularly, the passages in the base invalidity contention document discussing the OFDM Tone Modification references. Rather than repeat those disclosures here, they are incorporated by reference into this chart.</p>
<p>7. The method as recited in claim 6, further comprising: generating corresponding Quadrature Phase Shift Keying (QPSK) modulation values based on said sub-carrier pre-equalized OFDM data.</p>	<p>Li 748 discloses generating corresponding Quadrature Phase Shift Keying (QPSK) modulation values based on said sub-carrier pre-equalized OFDM data.</p> <p>For example, see the following passages and/or figures, as well as all related disclosures:</p> <p>See citations for claims 4, 5, 6.</p> <p>One of ordinary skill would find this limitation disclosed either expressly or inherently in the teachings of this reference and its incorporated disclosures taken as a whole, or in combination with the state of the art at the time of the alleged invention. To the extent this reference is not found to teach this element explicitly, implicitly, or inherently, the element would have been obvious to one of ordinary skill in the art based on this reference, common sense, ordinary creativity of one of ordinary skill in the art, and the state of the art. Additionally, it would have been obvious to combine this reference with one or more other prior art references identified in Defendants' Invalidity Contentions Cover Pleading, particularly, the passages in the base invalidity contention document discussing the OFDM Tone Modification and QPSK Usage references. Rather than repeat those disclosures here, they are incorporated by reference into this chart.</p>

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<p>9. The method as recited in claim 1, wherein said reverse path data signal includes identifiable training data.</p>	<p>Li 748 discloses The method as recited in claim 1, wherein said reverse path data signal includes identifiable training data.</p> <p>For example, see the following passages and/or figures, as well as all related disclosures:</p> <p>Li 748 discloses a pilot training signal which can be training data as well as the signals sent for the base station to calculate the power modifications.</p> <p>See discussion of 1[p], 1[a], 1[b], 1[c] describing reverse and forward path transmissions (downlink from base station) and signals sent thereon using OFDM subcarriers after training.</p> <p>See 5:20-36;</p> <p>See claims 1-23 (referencing pilot signals);</p> <p>See Figures 1B, 2, 3, 4.</p> <p>See 7:29-48 ("Pilot Symbols and SINR Measurement</p> <p>In one embodiment, each base station transmits pilot symbols simultaneously, and each pilot symbol occupies the entire OFDM frequency bandwidth, as shown in FIGS. 2A-C. Referring to FIGS. 2A-C, pilot symbols 201 are shown traversing the entire OFDM frequency bandwidth for cells A, B and C, respectively. In one embodiment, each of the pilot symbols have a length or duration of 128 microseconds with a guard time, the combination of which is approximately 152 microseconds. After each pilot period, there are a predetermined number of data periods followed by another set of pilot symbols. In one embodiment, there are four data periods used to transmit data after each pilot, and each of the data periods is 152 microseconds.</p> <p>A subscriber estimates the SINR for each cluster from the pilot symbols. In one embodiment, the subscriber first estimates the channel response, including the amplitude</p>

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	<p>and phase, as if there is no interference or noise. Once the channel is estimated, the subscriber calculates the interference/noise from the received signal.”)</p> <p>See 8:31-54;</p> <p>See 9:6-10:30;</p> <p>See 11:62-12:50;</p> <p>One of ordinary skill would find this limitation disclosed either expressly or inherently in the teachings of this reference and its incorporated disclosures taken as a whole, or in combination with the state of the art at the time of the alleged invention. To the extent this reference is not found to teach this element explicitly, implicitly, or inherently, the element would have been obvious to one of ordinary skill in the art based on this reference, common sense, ordinary creativity of one of ordinary skill in the art, and the state of the art. Additionally, it would have been obvious to combine this reference with one or more other prior art references identified in Defendants’ Invalidity Contentions Cover Pleading, particularly, the passages in the base invalidity contention document discussing the Channel Estimation and Training Data references. Rather than repeat those disclosures here, they are incorporated by reference into this chart.</p>
<p>10. The method as recited in claim 9, further comprising: comparing said identifiable training data to a local version of said training data to identify said at least one multipath transmission delay within said reverse path data signal.</p>	<p>Li 748 discloses comparing said identifiable training data to a local version of said training data to identify said at least one multipath transmission delay within said reverse path data signal.</p> <p>For example, see the following passages and/or figures, as well as all related disclosures:</p> <p>See citations for claim 9.</p> <p>One of ordinary skill would find this limitation disclosed either expressly or inherently in the teachings of this reference and its incorporated disclosures taken as a whole, or in</p>

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	<p>combination with the state of the art at the time of the alleged invention. To the extent this reference is not found to teach this element explicitly, implicitly, or inherently, the element would have been obvious to one of ordinary skill in the art based on this reference, common sense, ordinary creativity of one of ordinary skill in the art, and the state of the art. Additionally, it would have been obvious to combine this reference with one or more other prior art references identified in Defendants' Invalidity Contentions Cover Pleading, particularly, the passages in the base invalidity contention document discussing the Channel Estimation and Training Data references. Rather than repeat those disclosures here, they are incorporated by reference into this chart.</p>
<p>12. The method as recited in claim 3, wherein said at least one reverse transmission path is substantially reciprocal to said at least one forward transmission path.</p>	<p>Li 748 discloses wherein said at least one reverse transmission path is substantially reciprocal to said at least one forward transmission path.</p> <p>For example, see the following passages and/or figures, as well as all related disclosures:</p> <p>See discussion of 1[p], 1[a], 1[b], 1[c] describing that the base station is a transmitting device (e.g., for the downlink OFDM symbols) and that it also determines the pre-equalization parameter and performs the modification of the forward path (downlink) data signal based on the reverse link.</p> <p>The use of the reverse link channel conditions in Li 748 to adapt the forward path transmissions discloses this claim.</p> <p>Li 748 discloses TDD and using reverse path channel response to predict forward path channel response, which a POSITA would understand to necessarily disclose the limitations of this claim element.</p> <p>Indeed, the '369 acknowledges that reciprocity was already well-known prior to the '369 patent, particularly for TDD channels. See '369 patent at 7:22-34 ("As is well known, many materials are electromagnetically isotropic, which is a property resulting from symmetry in their associated permittivity and permeability tensors. The Lorentz Reciprocity</p>

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	<p>Theorem applies to such materials. Refraction and dielectric reflection from materials therefore often show reciprocity, or equivalence of forward and reverse channel characteristics. Diffraction and reflection are inherently reciprocal due to the minimal media affecting the electromagnetic wave. Thus, reciprocity can be used to determine channel characteristics that are used while pre-equalizing a transmitted path. The use of a reciprocal channel is very useful, for example, when Time Division Duplex (TDD) channels are implemented.”).</p> <p>One of ordinary skill would find this limitation disclosed either expressly or inherently in the teachings of this reference and its incorporated disclosures taken as a whole, or in combination with the state of the art at the time of the alleged invention. To the extent this reference is not found to teach this element explicitly, implicitly, or inherently, the element would have been obvious to one of ordinary skill in the art based on this reference, common sense, ordinary creativity of one of ordinary skill in the art, and the state of the art. Additionally, it would have been obvious to combine this reference with one or more other prior art references identified in Defendants’ Invalidity Contentions Cover Pleading, particularly, the passages in the base invalidity contention document discussing the Channel Estimation references. Rather than repeat those disclosures here, they are incorporated by reference into this chart.</p>
<p>13. The method as recited in claim 1, wherein identifying said at least one multipath transmission delay, determining said at least one forward path pre-equalization parameter, and modifying said forward path data signal are performed by a transmitting device.</p>	<p>Li 748 discloses wherein identifying said at least one multipath transmission delay, determining said at least one forward path pre-equalization parameter, and modifying said forward path data signal are performed by a transmitting device.</p> <p>For example, see the following passages and/or figures, as well as all related disclosures:</p> <p>See discussion of 1[p], 1[a], 1[b], 1[c] describing that the base station is a transmitting device (e.g., for the downlink OFDM symbols) and that it also determines the pre-equalization parameter and performs the modification of the forward path (downlink) data signal.</p>

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	<p>One of ordinary skill would find this limitation disclosed either expressly or inherently in the teachings of this reference and its incorporated disclosures taken as a whole, or in combination with the state of the art at the time of the alleged invention. To the extent this reference is not found to teach this element explicitly, implicitly, or inherently, the element would have been obvious to one of ordinary skill in the art based on this reference, common sense, ordinary creativity of one of ordinary skill in the art, and the state of the art. Additionally, it would have been obvious to combine this reference with one or more other prior art references identified in Defendants' Invalidity Contentions Cover Pleading, particularly, the passages in the base invalidity contention document discussing the OFDM Tone Modification references. Rather than repeat those disclosures here, they are incorporated by reference into this chart.</p>
<p>14. The method as recited in claim 13, wherein said transmitting device includes a base station device that is operatively configured for use in a wireless communication system.</p>	<p>Li 748 discloses wherein said transmitting device includes a base station device that is operatively configured for use in a wireless communication system.</p> <p>For example, see the following passages and/or figures, as well as all related disclosures:</p> <p>See citations for claim 13.</p> <p>One of ordinary skill would find this limitation disclosed either expressly or inherently in the teachings of this reference and its incorporated disclosures taken as a whole, or in combination with the state of the art at the time of the alleged invention. To the extent this reference is not found to teach this element explicitly, implicitly, or inherently, the element would have been obvious to one of ordinary skill in the art based on this reference, common sense, ordinary creativity of one of ordinary skill in the art, and the state of the art. Additionally, it would have been obvious to combine this reference with one or more other prior art references identified in Defendants' Invalidity Contentions Cover Pleading, particularly, the passages in the base invalidity contention document discussing the OFDM Tone Modification references. Rather than repeat those disclosures here, they are incorporated by reference into this chart.</p>

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<p>15. The method as recited in claim 13, further comprising: using at least one transmitting device receive antenna operatively coupled to said transmitting device to receive said reverse path data signal over at least one reverse transmission path from the receiving device.</p>	<p>Li 748 discloses using at least one transmitting device receive antenna operatively coupled to said transmitting device to receive said reverse path data signal over at least one reverse transmission path from the receiving device.</p> <p>For example, see the following passages and/or figures, as well as all related disclosures:</p> <p>See discussion of 1[p], 1[a], 1[b], 1[c] describing that the base station is a transmitting device (e.g., for the downlink OFDM symbols) and that it also receives the reverse path (uplink) signals via an one or more receive antennas.</p> <p>See citations for claim 13.</p> <p>See Figure 8; 12:60-13:12 (“FIG. 8 shows one embodiment of a frequency reuse pattern for an exemplary cellular set up. Each cell has hexagonal structure with six sectors using directional antennas at the base stations. Between the cells, the frequency reuse factor is one. Within each cell, the frequency reuse factor is 2 where the sectors use two frequencies alternatively. As shown in FIG. 8, each shaded sector uses half of the available OFDMA clusters and each unshaded sector uses the other half of the clusters. Without loss of generality, the clusters used by the shaded sectors are referred to herein as odd clusters and those used by the unshaded sectors are referred to herein as even clusters. Consider the downlink signaling with omni-directional antennas at the subscribers. From FIG. 8, it is clear that for the downlink in the shaded sectors, Cell A interferes with Cell B, which in turn interferes with Cell C, which in turn interferes with Cell A, namely, A->B->C->A. For the unshaded sectors, Cell A interferes with Cell C, which in turn interferes with Cell B, which in turn interferes with Cell A, namely, A->C->B->A.”);</p> <p>Moreover, the use of one or more antennas at a cellular base station to receive data and to transmit data would be already within the knowledge of a person of ordinary skill in the art, and/or inherent in such disclosure, and/or obvious in view of such disclosure.</p>

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	<p>One of ordinary skill would find this limitation disclosed either expressly or inherently in the teachings of this reference and its incorporated disclosures taken as a whole, or in combination with the state of the art at the time of the alleged invention. To the extent this reference is not found to teach this element explicitly, implicitly, or inherently, the element would have been obvious to one of ordinary skill in the art based on this reference, common sense, ordinary creativity of one of ordinary skill in the art, and the state of the art. Additionally, it would have been obvious to combine this reference with one or more other prior art references identified in Defendants' Invalidity Contentions Cover Pleading, particularly, the passages in the base invalidity contention document discussing the Antenna Arrays references. Rather than repeat those disclosures here, they are incorporated by reference into this chart.</p>
<p>19. The method as recited in claim 15, wherein said transmitting device is operatively coupled to a plurality of first device receive antennas.</p>	<p>Li 748 discloses wherein said transmitting device is operatively coupled to a plurality of first device receive antennas.</p> <p>For example, see the following passages and/or figures, as well as all related disclosures:</p> <p>See discussion for claim 15.</p> <p>See Figure 8; 12:60-13:12 ("FIG. 8 shows one embodiment of a frequency reuse pattern for an exemplary cellular set up. Each cell has hexagonal structure with six sectors using directional antennas at the base stations. Between the cells, the frequency reuse factor is one. Within each cell, the frequency reuse factor is 2 where the sectors use two frequencies alternatively. As shown in FIG. 8, each shaded sector uses half of the available OFDMA clusters and each unshaded sector uses the other half of the clusters. Without loss of generality, the clusters used by the shaded sectors are referred to herein as odd clusters and those used by the unshaded sectors are referred to herein as even clusters. Consider the downlink signaling with omni-directional antennas at the subscribers. From FIG. 8, it is clear that for the downlink in the shaded sectors, Cell A interferes with Cell B, which in turn interferes with Cell C, which in turn interferes with Cell A, namely, A->B-</p>

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	<p>>C->A. For the unshaded sectors, Cell A interferes with Cell C, which in turn interferes with Cell B, which in turn interferes with Cell A, namely, A->C->B->A.”);</p> <p>Moreover, the use of one or more antennas at a cellular base station to receive data and to transmit data would be already within the knowledge of a person of ordinary skill in the art, and/or inherent in such disclosure, and/or obvious in view of such disclosure</p> <p>One of ordinary skill would find this limitation disclosed either expressly or inherently in the teachings of this reference and its incorporated disclosures taken as a whole, or in combination with the state of the art at the time of the alleged invention. To the extent this reference is not found to teach this element explicitly, implicitly, or inherently, the element would have been obvious to one of ordinary skill in the art based on this reference, common sense, ordinary creativity of one of ordinary skill in the art, and the state of the art. Additionally, it would have been obvious to combine this reference with one or more other prior art references identified in Defendants’ Invalidity Contentions Cover Pleading, particularly, the passages in the base invalidity contention document discussing the Antenna Arrays references. Rather than repeat those disclosures here, they are incorporated by reference into this chart.</p>
<p>21. The method as recited in claim 15, wherein determining said at least one forward path pre-equalization parameter based on said at least one transmission delay further includes: determining at least one angle of arrival of said reverse path data signal with respect to said at least one transmitting device receive antenna.</p>	<p>Li 748 discloses wherein determining said at least one forward path pre-equalization parameter based on said at least one transmission delay further includes: determining at least one angle of arrival of said reverse path data signal with respect to said at least one transmitting device receive antenna.</p> <p>For example, see the following passages and/or figures, as well as all related disclosures:</p> <p>See discussion for claim 15.</p> <p>One of ordinary skill would find this limitation disclosed either expressly or inherently in the teachings of this reference and its incorporated disclosures taken as a whole, or in combination with the state of the art at the time of the alleged invention. To the extent this</p>

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	<p>reference is not found to teach this element explicitly, implicitly, or inherently, the element would have been obvious to one of ordinary skill in the art based on this reference, common sense, ordinary creativity of one of ordinary skill in the art, and the state of the art. Additionally, it would have been obvious to combine this reference with one or more other prior art references identified in Defendants' Invalidity Contentions Cover Pleading, particularly, the passages in the base invalidity contention document discussing the Antenna Arrays references. Rather than repeat those disclosures here, they are incorporated by reference into this chart.</p>
<p>28. The method as recited in claim 13, further comprising: using at least one transmitting device transmit antenna operatively coupled to said transmitting device to transmit said modified forward path data signal over at least one forward transmission path to the receiving device.</p>	<p>Li 748 discloses using at least one transmitting device transmit antenna operatively coupled to said transmitting device to transmit said modified forward path data signal over at least one forward transmission path to the receiving device.</p> <p>For example, see the following passages and/or figures, as well as all related disclosures:</p> <p>See discussion in 1[p], 1[c] regarding transmissions from base station to subscriber.</p> <p>See discussion for claim 15.</p> <p>See Figure 8; 12:60-13:12 ("FIG. 8 shows one embodiment of a frequency reuse pattern for an exemplary cellular set up. Each cell has hexagonal structure with six sectors using directional antennas at the base stations. Between the cells, the frequency reuse factor is one. Within each cell, the frequency reuse factor is 2 where the sectors use two frequencies alternatively. As shown in FIG. 8, each shaded sector uses half of the available OFDMA clusters and each unshaded sector uses the other half of the clusters. Without loss of generality, the clusters used by the shaded sectors are referred to herein as odd clusters and those used by the unshaded sectors are referred to herein as even clusters. Consider the downlink signaling with omni-directional antennas at the subscribers. From FIG. 8, it is clear that for the downlink in the shaded sectors, Cell A interferes with Cell B, which in turn interferes with Cell C, which in turn interferes with Cell A, namely, A->B-</p>

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	<p>>C->A. For the unshaded sectors, Cell A interferes with Cell C, which in turn interferes with Cell B, which in turn interferes with Cell A, namely, A->C->B->A.”);</p> <p>Moreover, the use of one or more antennas at a cellular base station to receive data and to transmit data would be already within the knowledge of a person of ordinary skill in the art, and/or inherent in such disclosure, and/or obvious in view of such disclosure</p> <p>One of ordinary skill would find this limitation disclosed either expressly or inherently in the teachings of this reference and its incorporated disclosures taken as a whole, or in combination with the state of the art at the time of the alleged invention. To the extent this reference is not found to teach this element explicitly, implicitly, or inherently, the element would have been obvious to one of ordinary skill in the art based on this reference, common sense, ordinary creativity of one of ordinary skill in the art, and the state of the art. Additionally, it would have been obvious to combine this reference with one or more other prior art references identified in Defendants’ Invalidity Contentions Cover Pleading, particularly, the passages in the base invalidity contention document discussing the Antenna Arrays references. Rather than repeat those disclosures here, they are incorporated by reference into this chart.</p>
<p>32. The method as recited in claim 28, further comprising: setting at least one antenna pointing parameter associated with said at least one transmitting device transmit antenna based on said at least one forward path pre-equalization parameter.</p>	<p>Li 748 discloses setting at least one antenna pointing parameter associated with said at least one transmitting device transmit antenna based on said at least one forward path pre-equalization parameter.</p> <p>For example, see the following passages and/or figures, as well as all related disclosures:</p> <p>See discussion in 1[p], 1[c] regarding transmissions from base station to subscriber.</p> <p>See Figure 8; 12:60-13:12 (“FIG. 8 shows one embodiment of a frequency reuse pattern for an exemplary cellular set up. Each cell has hexagonal structure with six sectors using directional antennas at the base stations. Between the cells, the frequency reuse factor is one. Within each cell, the frequency reuse factor is 2 where the sectors use two frequencies</p>

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	<p>alternatively. As shown in FIG. 8, each shaded sector uses half of the available OFDMA clusters and each unshaded sector uses the other half of the clusters. Without loss of generality, the clusters used by the shaded sectors are referred to herein as odd clusters and those used by the unshaded sectors are referred to herein as even clusters.</p> <p>Consider the downlink signaling with omni-directional antennas at the subscribers. From FIG. 8, it is clear that for the downlink in the shaded sectors, Cell A interferes with Cell B, which in turn interferes with Cell C, which in turn interferes with Cell A, namely, A->B->C->A. For the unshaded sectors, Cell A interferes with Cell C, which in turn interferes with Cell B, which in turn interferes with Cell A, namely, A->C->B->A.”);</p> <p>One of ordinary skill would find this limitation disclosed either expressly or inherently in the teachings of this reference and its incorporated disclosures taken as a whole, or in combination with the state of the art at the time of the alleged invention. To the extent this reference is not found to teach this element explicitly, implicitly, or inherently, the element would have been obvious to one of ordinary skill in the art based on this reference, common sense, ordinary creativity of one of ordinary skill in the art, and the state of the art. Additionally, it would have been obvious to combine this reference with one or more other prior art references identified in Defendants’ Invalidity Contentions Cover Pleading, particularly, the passages in the base invalidity contention document discussing the Antenna Arrays references. Rather than repeat those disclosures here, they are incorporated by reference into this chart.</p>
<p>33. The method as recited in claim 28, further comprising: setting at least one phased array antenna transmission directing parameter associated with said at least one transmitting device transmit antenna based on said at least one</p>	<p>Li 748 discloses setting at least one phased array antenna transmission directing parameter associated with said at least one transmitting device transmit antenna based on said at least one forward path pre-equalization parameter.</p> <p>For example, see the following passages and/or figures, as well as all related disclosures:</p> <p>See citations for claims 28, 32.</p>

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forward path pre-equalization parameter.	<p>One of ordinary skill would find this limitation disclosed either expressly or inherently in the teachings of this reference and its incorporated disclosures taken as a whole, or in combination with the state of the art at the time of the alleged invention. To the extent this reference is not found to teach this element explicitly, implicitly, or inherently, the element would have been obvious to one of ordinary skill in the art based on this reference, common sense, ordinary creativity of one of ordinary skill in the art, and the state of the art. Additionally, it would have been obvious to combine this reference with one or more other prior art references identified in Defendants' Invalidity Contentions Cover Pleading, particularly, the passages in the base invalidity contention document discussing the Antenna Arrays references. Rather than repeat those disclosures here, they are incorporated by reference into this chart.</p>
<p>35. The method as recited in claim 28, further comprising: selecting said at least one transmitting device transmit antenna from a plurality of transmitting device transmit antennas that are each operatively coupled to said transmitting device.</p>	<p>Li 748 discloses selecting said at least one transmitting device transmit antenna from a plurality of transmitting device transmit antennas that are each operatively coupled to said transmitting device.</p> <p>For example, see the following passages and/or figures, as well as all related disclosures:</p> <p>See discussion of 1[p], 1[a], 1[c] describing that the base station is a transmitting device (e.g., for the downlink OFDM symbols) and that it also receives the reverse path (uplink) signals via an one or more receive antennas.</p> <p>See citations for claim 13.</p> <p>See Figure 8; 12:60-13:12 ("FIG. 8 shows one embodiment of a frequency reuse pattern for an exemplary cellular set up. Each cell has hexagonal structure with six sectors using directional antennas at the base stations. Between the cells, the frequency reuse factor is one. Within each cell, the frequency reuse factor is 2 where the sectors use two frequencies alternatively. As shown in FIG. 8, each shaded sector uses half of the available OFDMA clusters and each unshaded sector uses the other half of the clusters. Without loss of</p>

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	<p>generality, the clusters used by the shaded sectors are referred to herein as odd clusters and those used by the unshaded sectors are referred to herein as even clusters.</p> <p>Consider the downlink signaling with omni-directional antennas at the subscribers. From FIG. 8, it is clear that for the downlink in the shaded sectors, Cell A interferes with Cell B, which in turn interferes with Cell C, which in turn interferes with Cell A, namely, A->B->C->A. For the unshaded sectors, Cell A interferes with Cell C, which in turn interferes with Cell B, which in turn interferes with Cell A, namely, A->C->B->A.”);</p> <p>Moreover, the use of one or more antennas at a cellular base station to receive data and to transmit data would be already within the knowledge of a person of ordinary skill in the art, and/or inherent in such disclosure, and/or obvious in view of such disclosure</p> <p>One of ordinary skill would find this limitation disclosed either expressly or inherently in the teachings of this reference and its incorporated disclosures taken as a whole, or in combination with the state of the art at the time of the alleged invention. To the extent this reference is not found to teach this element explicitly, implicitly, or inherently, the element would have been obvious to one of ordinary skill in the art based on this reference, common sense, ordinary creativity of one of ordinary skill in the art, and the state of the art. Additionally, it would have been obvious to combine this reference with one or more other prior art references identified in Defendants’ Invalidity Contentions Cover Pleading, particularly, the passages in the base invalidity contention document discussing the Antenna Arrays references. Rather than repeat those disclosures here, they are incorporated by reference into this chart.</p>
<p>36. The method as recited in claim 35, further comprising: selectively transmitting a plurality of beams using two or more transmitting device transmit antennas.</p>	<p>Li 748 discloses selectively transmitting a plurality of beams using two or more transmitting device transmit antennas.</p> <p>For example, see the following passages and/or figures, as well as all related disclosures:</p> <p>One of ordinary skill would find this limitation disclosed either expressly or inherently in the teachings of this reference and its incorporated disclosures taken as a whole, or in</p>

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	<p>combination with the state of the art at the time of the alleged invention. To the extent this reference is not found to teach this element explicitly, implicitly, or inherently, the element would have been obvious to one of ordinary skill in the art based on this reference, common sense, ordinary creativity of one of ordinary skill in the art, and the state of the art. Additionally, it would have been obvious to combine this reference with one or more other prior art references identified in Defendants' Invalidity Contentions Cover Pleading, particularly, the passages in the base invalidity contention document discussing the Antenna Arrays references. Rather than repeat those disclosures here, they are incorporated by reference into this chart.</p>
<p>37. The method as recited in claim 36, wherein each of said transmitted plurality of beams is selectively adjusted in phase and amplitude to reduce multipath affects when received by said receiving device.</p>	<p>Li 748 discloses wherein each of said transmitted plurality of beams is selectively adjusted in phase and amplitude to reduce multipath affects when received by said receiving device.</p> <p>For example, see the following passages and/or figures, as well as all related disclosures:</p> <p>One of ordinary skill would find this limitation disclosed either expressly or inherently in the teachings of this reference and its incorporated disclosures taken as a whole, or in combination with the state of the art at the time of the alleged invention. To the extent this reference is not found to teach this element explicitly, implicitly, or inherently, the element would have been obvious to one of ordinary skill in the art based on this reference, common sense, ordinary creativity of one of ordinary skill in the art, and the state of the art. Additionally, it would have been obvious to combine this reference with one or more other prior art references identified in Defendants' Invalidity Contentions Cover Pleading, particularly, the passages in the base invalidity contention document discussing the Antenna Arrays references. Rather than repeat those disclosures here, they are incorporated by reference into this chart.</p>
<p>41. The method as recited in claim 1, wherein determining said at least one forward path pre-equalization</p>	<p>Li 748 discloses wherein determining said at least one forward path pre-equalization parameter based on said at least one transmission delay further includes: sub-band equalizing said forward path data signal using corresponding frequency domain reverse path data.</p>

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<p>parameter based on said at least one transmission delay further includes: sub-band equalizing said forward path data signal using corresponding frequency domain reverse path data.</p>	<p>For example, see the following passages and/or figures, as well as all related disclosures:</p> <p>See discussion of 1[p], 1[a], 1[b], 1[c] describing that the that the downlink OFDM transmissions including equalizing the downlink data signal using the corresponding frequency domain reverse path data.</p> <p>One of ordinary skill would find this limitation disclosed either expressly or inherently in the teachings of this reference and its incorporated disclosures taken as a whole, or in combination with the state of the art at the time of the alleged invention. To the extent this reference is not found to teach this element explicitly, implicitly, or inherently, the element would have been obvious to one of ordinary skill in the art based on this reference, common sense, ordinary creativity of one of ordinary skill in the art, and the state of the art. Additionally, it would have been obvious to combine this reference with one or more other prior art references identified in Defendants' Invalidity Contentions Cover Pleading, particularly, the passages in the base invalidity contention document discussing the Channel Estimation and OFDM Tone Modification references. Rather than repeat those disclosures here, they are incorporated by reference into this chart.</p>